Guidelines

Portable dune-forming fence

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Dune-forming fences can stabilise sand dunes including where blowouts have occurred. If a sand blow does not stabilise by itself, a dune-forming fence may help reduce erosion. They slow the wind speed and allow sand to deposit. Native vegetation can also help bind the sand. Dune-forming fences are cost-effective but take several years to work. Dune-forming fences are meant to be covered by sand and can stay in place when this happens. Another fence can be constructed on top if a higher dune is required.

Use these guidelines in conjunction with the information provided in Chapter 6 when planning works and engaging consultants and contractors to ensure the proposed works use the most effective methods and minimise the risk of causing damage to coastal values.

When to use dune-forming fences

Dune-forming fences are useful for helping to build dunes, repairing small blowouts and areas where natural stabilisation could take some years. They are more permanent than brush mulches, jute mesh or geotextiles.

Avoid using dune-forming fences along an eroding beachfront. They must be well above the high water mark to minimise damage and enable them to capture dry, wind-blown sand. There must also be enough sand supply in the dune-beach system to rebuild the dunes.

Obtain specialist advice about where and how fences should be placed. This will be based on the site conditions, including prevailing wind speeds and directions. Choose the lowest cost materials if the fences are likely to be buried quickly.

The most important areas of a sand blowout to stabilise are the edges, especially the forward edge and other places where the wind is funnelling sand away more quickly.

Environmental and cultural considerations

Dune-forming fences are installed to protect dune landforms, however the process of installation requires disturbance of the shoreline or dunes and as such has the potential to impact on natural and cultural values.

It is important to identify all natural values that may be affected. Seek advice from specialists.

It is important to identify all cultural values that may be affected. Contact Aboriginal Heritage Tasmania, an assessment and permit may be required. Contact the Parks and Wildlife Service Maritime Heritage Section.

Fence design

The method uses U-shaped portable fences that can be re-used. It takes about 15 minutes to make each fence. The height of the fences, and the distance between rows, is based on the local wind speed.

Plant native sand-binding plants on the leeward side of each fence, at least one plant/m2. These will grow in the shadow dune that forms behind each fence.

The fences can easily be removed and used to build up sand elsewhere.

Technique

Fence frames are made by sewing shadecloth onto 2.5 mm aluminium tubing bent into a U-shape.

The frames are 750 mm wide at the base and 1 m high.

Fences only 0.5 m high can be used in less windy areas, as 90% of wind-borne sand is transported in the first 0.5 m closest to the ground.

The distance between rows is then slightly less than 1 m.

Shadecloth mesh of 60% porosity (e.g. Rheem Shademesh light®) is sewn onto the frame with heavy fishing line.

Line the fences up in a curved pattern facing in the direction of the prevailing wind. The distance between rows of 1 m fences is 2.5m.

Installation

Minimise impacts on coastal values during installation.

Time works to minimise disturbance to wildlife such as shorebirds, penguins and shearwaters where necessary.

Ensure all works staff and contractors are briefed on minimising environmental impacts and provide adequate supervision to best practise environmental standards are being implemented.

During works, protect the vegetation that stabilises the sand by restricting access by vehicles and people.

Rehabilitate disturbed areas as soon as possible. Assess the need for revegetation. If there is no natural vegetation nearby to supply seed, plant the area with appropriate local native species, or use direct seeding after the works are in place.

Monitoring

Follow up surveys and ongoing monitoring is essential to assess the success of the fencing in trapping sand and building up the dune. Monitoring will also identify any problems with the structure and any repairs required.

More Information

Coastal dune management, NSW Dept of Land and Water Conservation 2001

Tasmanian coastal works manual: Chapter 6, Page & Thorp 2010

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Figure 1: Portable dune forming fences, developed by Frances Mowling, restoring sand dunes at Waterhouse Conservation Area. © Frances Mowling